Cuyama Valley Groundwater Basin

- Groundwater Basin Number: 3-13
- County: Santa Barbara, San Luis Obispo, Ventura, and Kern
- Surface Area: 147,200 acres (230 square miles)

Basin Boundaries and Hydrology

The Cuyama Valley Groundwater Basin underlies an east-trending valley bounded on the north by the Caliente Range and on the southwest by the Sierra Madre Mountains. The valley is drained by the Cuyama River. Average annual precipitation ranges from 7 inches to 15 inches per year.

Hydrogeologic Information

Water Bearing Formations

Groundwater is found in Holocene age alluvium, and older terrestrial deposits. Groundwater in the basin is mainly unconfined, but confined water and perched water are found locally.
The specific yield is estimated to range from less than 10 percent in the southwestern part of the basin, to more than 15 percent in the northern and southeastern parts of the basin (DWR 1998).

Holocene Alluvium. In the western part of the basin, the alluvium consists of thick beds of sand and gravel alternating with beds of clay. In the south central part of the basin, alluvium is predominantly sand and silt with some beds of gravel and clay. In the eastern part of the basin, alluvium consists of coarse gravel and sand. Except in the western part of the basin, the alluvium is not the principal water-bearing formation. The thickness of the alluvium is inferred to be from 150 to 250 feet (Upson and Worts 1951).

Older Terrestrial Deposits. Pleistocene age terrace deposits found in the valley are relatively thin and mainly above the zone of saturation. Underlying older terrestrial deposits, which include the Pliocene age Cuyama or Morales formation and a fanglomerate, are the main water-bearing units in the basin. These deposits consist of large and extensive bodies of poorly consolidated clay, silt, and gravel (Upson and Worts 1951).

Restrictive Structures

Small faults that cut through the basin fill act as barriers to groundwater movement. Historically, flowing springs were found along the trace of faults that parallel Graveyard and Turkey Trap Ridges (SBCPDC 1994).

Recharge Areas

The main source of recharge is seepage from the Cuyama River (SBCPDC 1994).

Groundwater Level Trends

In the mid-1940s, water levels in the central portion of the basin were very shallow whereas water levels in the southern and eastern part of the basin were several hundred feet deep (SBCWA 1996). Water levels dropped from 2 to 8 feet per year between 1947 and 1996 (Singer 1970). Hydrographs show that groundwater levels have dropped about 150 feet in the west-central

part of the basin and more than 300 feet in the northeastern part of the basin during the last 40 to 50 years (DWR 1998). Groundwater movement is to the northwest, parallel to the Cuyama River.

Groundwater Storage

Groundwater Storage Capacity. The total storage capacity is estimated at 259,000 af for the portion of the basin within the boundaries of Ventura County (Ventura County 2001). The total storage capacity is estimated at 2,100,000 af (DWR 1975).

Groundwater in Storage. The total useable storage capacity is estimated at 400,000 af (DWR 1975).

Groundwater Budget (Type A)

Annual recharge estimated by seepage loss from streams and by infiltration of rain on the valley is between 8,300 and 12,000 af, (Upson and Worts 1951). The estimated total pumpage for irrigation from 1939 through 1946 is 87,600 af/yr (Upson and Worts 1951). Pumpage from the basin was estimated at 68,500 af in 1979 (Jones 1979). Inflow from stream seepage is estimated at 13,000 af/yr and rainfall infiltration at 1,000 af/yr (Jones 1979). The consumptive use by phreatophytes is estimated at 5,500 af/yr (Jones 1979). Subsurface outflow is estimated at 500 af/yr (Jones 1979).

Groundwater Quality

Characterization. Analyses of water from 3 public supply wells show an average TDS content of 858 mg/L and a range from 755 to 1,000 mg/L. USGS analyses show TDS content as high as 1,750 mg/L (SBCPDC 1994).

Impairments. Because of constant cycling and evaporation of irrigation water in the basin, water quality has been deteriorating (SBCWA 1996; SBCWA 2001). Groundwater near the Caliente Range has high salinity, which has been attributed to seepage out of the basement marine rocks (SBCPDC 1994). Nitrate content reached 400 mg/L in some shallow wells (SBCPDC 1994).

Water Quality in Public Supply Wells

Constituent Group[1]	Number of wells sampled[2]	Number of wells with a concentration above an MCL[3]
Inorganics – Primary	4	1
Radiological	3	0
Nitrates	4	0
Pesticides	2	0
VOCs and SVOCs	2	0
Inorganics – Secondary	4	3

[1] A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).
[2] Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.

[3] Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

Well Production characteristics

	Well yields (gal/min)
Municipal/Irrigation	NKD
	Total depths (ft)
Domestic	NKD
Municipal/Irrigation	NKD

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
USGS	Groundwater levels	17
USGS	Miscellaneous water quality	2
Department of Health Services and cooperators	Title 22 water quality	8

Basin Management

Groundwater management:	No groundwater management plan has been initiated.
Water agencies	
Public	San Luis Obispo County Department of Public Works, Kern County Water Agency, Ventura County Department of Water Resources, Santa Barbara County Water Agency, Cuyama CSD
Private	

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Additional References

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Errata

Changes made to the basin description will be noted here.